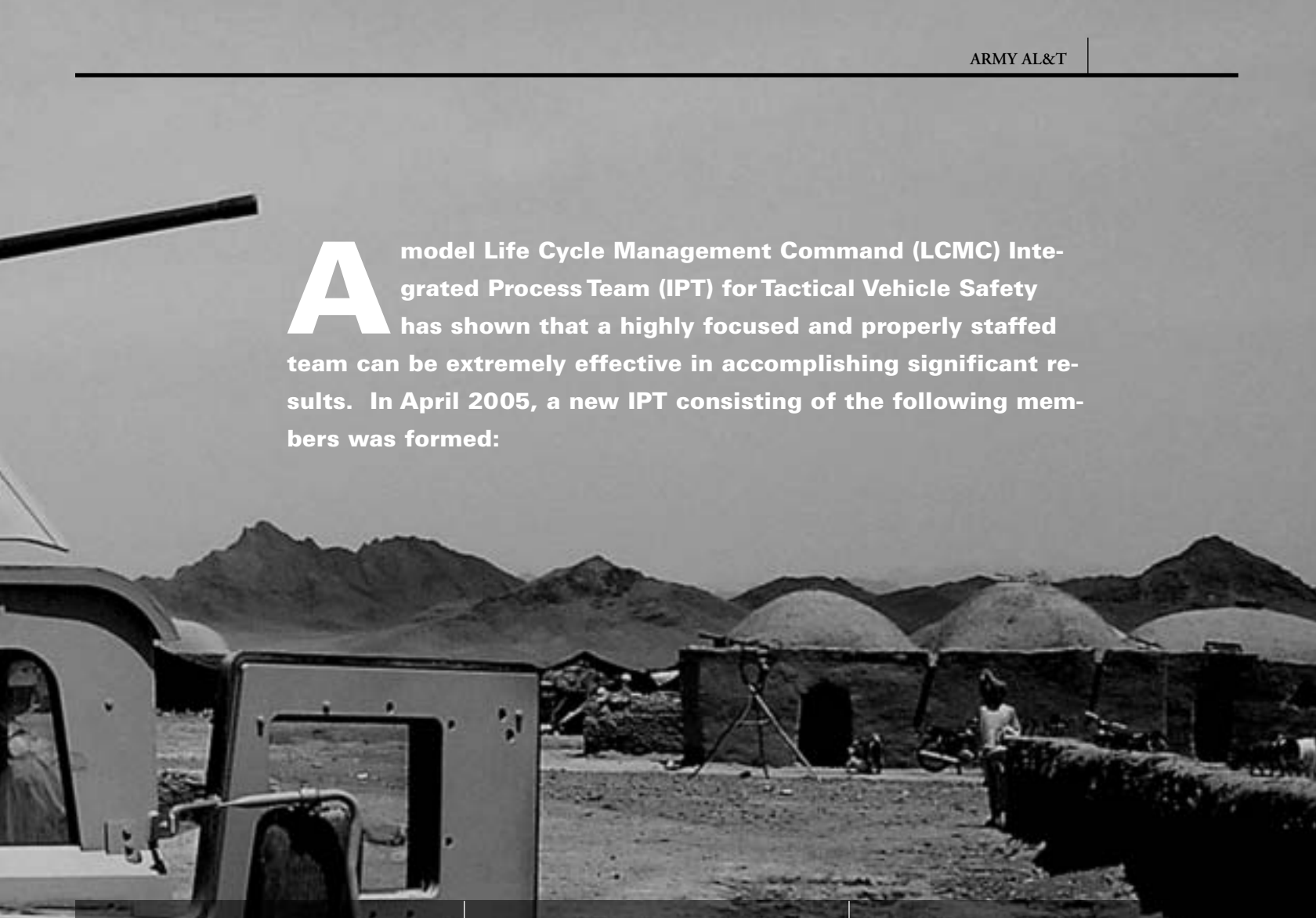
Putting Soldiers and Tactical Vehicle Safety First – New Partnership Results in Product Solutions

COL S.R. Kidd, Joseph M. Keusch and Terry Gonda

The Tactical Vehicle (TV) Safety IPT's primary goal is to tackle TV fleet safety initiatives. Here, PFC Jason Jenkins, Provisional Reconstruction Team Farah, International Security Assistance Force, keeps a watchful eye out for insurgent activity in Kinesk, Farah Province, Afghanistan. (DOD photo.)



A model Life Cycle Management Command (LCMC) Integrated Process Team (IPT) for Tactical Vehicle Safety has shown that a highly focused and properly staffed team can be extremely effective in accomplishing significant results. In April 2005, a new IPT consisting of the following members was formed:

- Project Manager Tactical Vehicles (PM TV).
- U.S. Army Tank-automotive and Armaments Command (TACOM) Safety Office.
- Combat Readiness Center.
- U.S. Army Tank Automotive Research, Development and Engineering Center (TARDEC).
- Aberdeen Test Center.
- U.S. Army Test and Evaluation Command (ATEC).
- TACOM Acquisition Center.
- Army Research Laboratory Human Resources Engineering Directorate.
- Rapid Equipping Force (REF).

Dedicated members of the PM TV Safety IPT have met daily since April, attacking some of the most serious problems affecting the Soldiers operating the actual TV fleet during *Operations Enduring* and *Iraqi Freedom* (*OEF/OIF*). The result is several quick-response procurements targeted at Soldier safety while operating the M1114 Up-Armored Humvee (UAH). These safety initiatives include a first-responder's tool, a gunner's restraint system, an improved seat restraint belt and a fire suppression system for the crew and cargo compartments.

Tactical vehicle safety has grown to be a serious concern over the last two years as data reveal a steady increase in injuries and fatalities because of improvised explosive devices (IEDs) and rollovers, which are the result of avoidance maneuvers as well as a lack of using existing on-board safety restraints. While in many cases training, tactics, techniques or operational procedures may be contributing to the issue, it became clear to many, including Army Chief of Staff GEN Peter J. Schoomaker, that materiel solutions had to be developed to enhance Soldier safety. The Safety IPT uses a collaborative process model to speed deployment of safety improvements to the area of responsibility (AOR). The IPT assesses initial requirements from the AOR and then develops a set of preliminary technical solution requirements. The team then determines what possible solutions exist in industry and/or other research centers and labs. Once a satisfactory configuration is found, it enters an accelerated test program at ATEC. Upon completion of accelerated tests for performance and human factors, the IPT works with the REF to get hardware to the field in limited quantities for quick assessment prior to a major procurement.

Vehicle rollovers as a result of avoidance maneuvers, coupled with misuse or non-use of existing on-board restraint systems, have caused numerous injuries and fatalities throughout *OEF/OIF*. The new gunner's restraint harness should help keep the gunner from being ejected from the vehicle in the event of a rollover or avoidance maneuver. (U.S. Air Force photo by TSGT Russell E. Cooley IV, 1st Combat Camera Squadron.)

In a parallel effort, the TACOM Acquisition Center prepares a request for proposal for an objective solution that builds on the experience gained from designing the quick-response materiel solution and successful test certification, combined with assessments of the quick-reaction solution from the AOR.

One solution that has completed the quick-response process is the first-responder's tool used to open the UAH doors after a rollover incident. This tool enables first responders to open the UAH lock from the outside. More than 13,000 were manufactured and deployed in support of *OEF/OIF*. Another quick-response solution currently being assessed is the gunner's restraint system, designed to restrain the gunner inside the UAH during rollover or collision-avoidance maneuvers. As installation and evaluations proceed in the AOR, the IPT keeps in close contact with the Soldiers using the new equipment via an assessment tool provided by PM TV and being returned by ATEC teams currently operating in the AOR.

The Safety IPT was developed after MG Brian I. Geehan, the Chief of Transportation, and BG Patrick J. O'Reilly, Program Executive Officer Combat Support and Combat Service Support (PEO CS&CSS), began discussions focused on improving Soldier safety for TV systems. The Transportation School took the lead for training impacts, while the PEO took the lead for developing materiel solutions. The PM TV at the time was COL Robert Groller. He was chiefly responsible for IPT formation and implementation.

The gunner's restraint system is a quick-response solution that is designed to keep the gunner inside the vehicle in the event of a rollover or collision-avoidance event. (U.S. Army photo courtesy of PM TV.)

Meanwhile, TARDEC set out to develop a coordinated support strategy. TARDEC's Tony Comito and Ken Ciarelli initially were appointed the temporary leads for TARDEC materiel and simulation solutions and began alerting TARDEC to the IPT's needs. As the IPT process matured, Carl Johnson assumed the position as the TARDEC reach-back member and began working with new, as well as long-standing, safety-related projects.

As TARDEC's numerous activities came to light, PM TV Assistant Project Manager for Safety Don Starkey noticed a difference. "Until this IPT, each organization was working separately and didn't know what the other was doing. We would put out market surveys and largely ignore the RDECs [research development and engineering centers], thinking they were working long-term science projects. This entire collaboration has proven to many of us that the RDECs can respond quickly in support of the PM community."

Groller agreed stating, "Dr. McClelland said TARDEC would come up with an anchor point for the gunner's restraint and they did it in a week. TARDEC came through in a crunch."

The IPT's combined efforts are currently focused on several simultaneous improvements:

- A replacement safety restraint for the Humvee that is easier to use than the current three-point belt (only 30-percent utilization currently).
- A fire suppression system for M1114 Humvees.
- A finite element analysis to evaluate and improve the protection level of the Gunners Protection Kit during rollover.
- Mounting hardware for the gunner restraint solution. The gunner restraint system solution prevents Soldiers from separating from the vehicle during extreme maneuvers. The kit requires minimal effort to install.

Dr. Richard McClelland, TARDEC Director, is exceptionally proud of his organization's efforts and is delighted by the overall level of cooperation he has witnessed. "The Tactical Vehicle Safety effort is the best collaboration and the most pure team effort I've ever seen here. It is intensively managed with daily meetings of all the right people and is resulting in fielding items directly to the troops in Iraq."

According to Starkey, completeness in the IPT's composition has been the secret to streamlining. "Every time we get hardware to evaluate, the Operational Test Center supplies Soldiers to help evaluate technologies so we make sure we're developing usable products. The Safety Office provides daily input to make sure that, in the end, this will be a viable solution. R&D [research and development] and the testers are right there planning every step, while contracting and the REF help us streamline acquisition. Everyone continually understands the progress and can weigh-in daily at 0800 in the PM TV Conference Room."

PM TV and TARDEC are leveraging current Army technologies to tailor a mounted fire suppression system for the M1114 Humvee. (U.S. Army photo courtesy of PM TV.)

Starkey has high praise for this IPT and admits it hasn't been easy, but that enormous progress has been made over these few months. "Initially in the effort, there were disagreements on how to proceed. For instance, we had a debate over five-point versus three-point restraints. By bringing the entire team together, everyone participated in fleshing out the facts. We converted wants into requirements, developed solutions based on an agreed schedule and came to a successful resolution together. Now, all are on board and procurement can see what's coming down the pike."

The new seat restraints offer ease of ingress and egress and fit 95 percent of males wearing Interceptor Body Armor and combat gear. (U.S. Army photo courtesy of PM TV.)

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JOSEPH M. KEUSCH is the PM TV Engineering Division Chief. He has a B.S. in electrical engineering and an M.B.A. from Wayne State University. He has worked at the Detroit Arsenal for 16 years at both TARDEC and PM TV.

TERRY GONDA is a senior research engineer with Research, Development and Engineering Command, TARDEC, and is currently on special assignment leading a Lean Six Sigma project to develop the future-state map for working technology insertion within the TACOM LCMC. She has a B.S. in computer science from Oakland University with specialized training in infrared technology and modeling. She has been the Army's lead for vehicle thermal signature modeling for the last 20 years, serving as chair of a NATO research panel on synthetic imaging and camouflage and managing the development of a commercially successful dual-use thermal modeling tool in cooperation with the Ford Motor Co., the Navy and the Air Force.